condition including positional information of recognition areas of the manuscript; and

transmitting means for transmitting a control signal including the obtained information of character recognizing condition to the terminal,

wherein the terminal performs character recognition of character images included in the image data in accordance with the information of character recognizing condition included in the transmitted control signal.

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REMARKS

This application has been carefully reviewed in light of the Office Action dated April 19, 2002 (Paper No. 16). Claims 1 to 35, 37 to 40, 42, 44 to 47, 49 and 51 to 80 are currently in the application, with Claims 1 to 15, 25 to 35 and 51 to 78 having been withdrawn from consideration. Claims 79 and 80 have been added herein. Claims 16, 20, 24, 79 and 80 are the independent claims currently under consideration. Reconsideration and further examination are respectfully requested.

Claims 16, 18 to 20 and 22 to 24 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,982,928 (Shimada); Claims 17 and 21 were rejected under § 103(a) over Shimada in view of U.S. Patent No. 5,796,863 (Lyon); and Claims 37 to 40, 42, 44 to 47 and 49 were rejected under § 103(a) over Shimada in view of Japan 58-182956 (Kunio) and U.S. Patent No. 5,848,187 (Bricklin). Applicant has carefully considered the Examiner's comments and the applied references and respectfully submits that the claims currently under consideration are patentably distinguishable over the applied references for at least the following reasons.

The present invention concerns character recognition of character images within image data of a manuscript. According to the invention, image data is obtained by scanning the manuscript. The image data includes a manuscript ID image, which is recognized to obtain a manuscript ID for identification of the manuscript. The manuscript ID is transmitted to a central control unit, which obtains an information of character recognizing condition, including positional information of recognition areas of the manuscript, based on the manuscript ID. A control signal including the information of character recognizing condition is transmitted by the central control unit and character recognition of the character images is performed in accordance with the control signal.

With reference to the claim language, independent Claims 16, 20 and 24 concern a communication system that includes a terminal and a central control unit. Image data of a manuscript is obtained by scanning the manuscript, where the image data includes a manuscript ID image. The manuscript ID image included in the image data is recognized and a manuscript ID is obtained as the recognition result of the manuscript ID image. The manuscript ID indicates information for an identification of the manuscript. The recognized manuscript ID is transmitted from the terminal to the central control unit. The central control unit obtains an information of character recognizing condition based on the manuscript ID, where the information of character recognizing condition includes positional information of recognition areas of the manuscript. A control signal including the information of character recognizing condition is transmitted from the central control unit to the terminal. Character images included in the image data are recognized in accordance with the information of character recognizing condition included with the control signal.

The applied references are not understood to disclose or suggest the foregoing features of the present invention. In particular, the applied references are not understood to disclose or suggest at least the features of obtaining image data of a manuscript by scanning the manuscript, where the image data include a manuscript ID image, obtaining a manuscript ID for identification of the manuscript by recognizing the manuscript ID image in the image data, and transmitting the manuscript ID to a central control unit.

Shimada concerns a system in which a host terminal acquires handwritten data from connected terminals through a network. When a request to perform character recognition is entered at the host terminal, the handwritten data is returned to the terminals from which it originated for character recognition processing, after which the results of character recognition are returned to the host terminal by the respective connected terminals. However, Shimada is not understood to disclose or suggest obtaining the handwritten data in the respective terminals by scanning a manuscript. Rather, Shimada is understood to obtain the handwritten data by a user entering handwritten characters in a window of the terminal using a coordinate input device such as a mouse or digitizer. Nowhere in Shimada is it understood to disclose or suggest the scanning of a manuscript to obtain the handwritten data.

Furthermore, the handwritten data obtained and transmitted in Shimada is not understood to include a manuscript ID image that is recognized to obtain a manuscript ID for identification of the manuscript. The Office Action associates a terminal ID or describer name discussed in Shimada with the manuscript ID of the present invention.

Applicant respectfully disagrees with this association. First, the terminal ID or describer name in Shimada is understood to identify a particular terminal from which handwritten data has been submitted rather than identifying a manuscript that has been scanned. Second, Shimada does not disclose or suggest obtaining the terminal ID or describer name by recognizing an image in image data. The Office Action contends that it would have been obvious to one of ordinary skill in the art to modify the system described in Shimada to include means to recognize a manuscript ID. However, the Office Action identifies no motivation in the references themselves or in that which is generally known to those of ordinary skill in the art to modify Shimada in such a manner. Rather, the Office Action merely describes potential advantages resulting from such a modification, which Applicant respectfully submits is insufficient to show obviousness.

As discussed above, Shimada is not understood to disclose or suggest obtaining image data of a manuscript by scanning the manuscript and obtaining a manuscript ID for identifying the manuscript by recognizing a manuscript ID image in the image data. Since Shimada is not understood to obtain a manuscript ID like that utilized in the present invention, it follows that Shimada is also not understood to transmit such a manuscript ID to a central control unit.

Based on the foregoing, Shimada is not understood to disclose or suggest at least the features of obtaining image data of a manuscript by scanning the manuscript, where the image data include a manuscript ID image, obtaining a manuscript ID for identification of the manuscript by recognizing the manuscript ID image in the image data, and transmitting the manuscript ID to a central control unit.

Lyon, Kunio, and Bricklin, which were applied in the rejections of certain dependent claims, have been reviewed and are not understood to disclose or suggest the foregoing features of the present invention. In particular, Lyon, Kunio and Bricklin, either alone or in combination with Shimada, are not understood to disclose or suggest at least the features of obtaining image data of a manuscript by scanning the manuscript, where the image data include a manuscript ID image, obtaining a manuscript ID for identification of the manuscript by recognizing the manuscript ID image in the image data, and transmitting the manuscript ID to a central control unit.

Therefore, independent Claims 16, 20 and 24 are believed to be allowable over the applied references. Reconsideration and withdrawal of the § 103(a) rejection of Claims 16, 20 and 24 are respectfully requested.

New independent Claim 79 concerns a terminal that performs communication with a central control apparatus. The terminal obtains image data of a manuscript by scanning the manuscript, where the image data includes a manuscript ID image. The manuscript ID image included in the image data is recognized and a manuscript ID is obtained as the recognition result of the manuscript ID image, where the manuscript ID indicates information for an identification of the manuscript. The recognized manuscript ID is transmitted to the central control apparatus. A control signal is received from the central control apparatus, the control signal including an information of character recognizing condition of the manuscript determined by the central control apparatus based on the manuscript ID. The information of character recognizing condition includes positional information of recognition areas of the manuscript. Character

recognition of character images included in the image data is performed in accordance with the information of character recognizing condition included with the control signal.

New independent Claim 80 concerns a central control apparatus that performs communication with a terminal. A manuscript ID transmitted from the terminal, wherein the manuscript ID is obtained by the terminal by recognizing a manuscript ID image included in image data obtained by scanning a manuscript. An information of character recognizing condition is obtained based on the received manuscript ID, the information of character recognizing condition including positional information of recognition areas of the manuscript. A control signal including the obtained information of character recognizing condition is transmitted to the terminal. The terminal performs character recognition of character images included in the image data in accordance with the information of character recognizing condition included in the transmitted control signal.

As discussed above with respect to independent Claims 16, 20 and 24, the applied references are not understood to disclose or suggest at least the features of obtaining image data of a manuscript by scanning the manuscript, where the image data include a manuscript ID image, obtaining a manuscript ID for identification of the manuscript by recognizing the manuscript ID image in the image data, and transmitting the manuscript ID to a central control unit. Accordingly, new Claims 79 and 80 are also believed to be allowable over the applied references.

The other claims currently under consideration are each dependent from the independent claims discussed above and are therefore believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed

to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendment and remarks, the claims currently under consideration are believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, California, office by telephone at (714) 540-8700. All correspondence should be directed to our address given below.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

16. (Three Times Amended) A communication system comprising [that performs communication between] a terminal and a central control unit, said terminal comprising:

[read] image obtaining means for [reading] obtaining image data of a manuscript by scanning the manuscript, the image data including a manuscript ID [as image data] image;

manuscript ID recognition means for recognizing the manuscript ID [from] image included in the image data and obtaining a manuscript ID as the recognition result of the manuscript ID image, the manuscript ID indicating information for an identification of the manuscript;

first transmitting means for transmitting the recognized manuscript ID to said central control unit;

first receiving means for receiving a control signal from [the] said central control unit, the control signal including an information of character recognizing condition [according to] of the manuscript determined based on the [transmitted] manuscript ID by the central control unit, the information of character recognizing condition including positional information of recognition areas of the manuscript; and

character recognition means for performing character recognition [from] of character images included in the image data in accordance with the information of

character recognizing condition included with the control signal;

said central control unit comprising:

second receiving means for receiving the manuscript ID transmitted from said terminal;

obtaining means for obtaining the information of character recognizing condition [according to] based on the received manuscript ID, the information of character recognizing condition including positional information of recognition areas of the manuscript; and

second transmitting means for transmitting the control signal including the obtained information of character recognizing condition to said terminal.

17. (Twice Amended) The communication system according to claim 16, wherein said character recognition means determines recognition candidate characters corresponding to [said] the image data in accordance with the information of character recognition condition included with the control signal and outputs a predetermined number of recognition candidate characters in [the] an order according to largeness of similarity of the recognition candidate characters.

18. (Three Times Amended) The communication system according to claim 16, wherein said central control unit further comprises [comprising] a database for managing [said] the control signal for the information of character recognizing condition corresponding to the manuscript ID, wherein said obtaining means obtains from said

database the control signal corresponding to the received manuscript ID.

19. (Twice Amended) The communication system according to claim 16, wherein the information of character recognizing condition includes positional information, showing each of plural recognition areas in [said] the image data, and recognition dictionary information showing a recognition dictionary used for recognition in each recognition area.

20. (Three Times Amended) A control method for a communication system that [performs communication between] includes a terminal and a central control unit, said control method comprising the steps of:

[a read step of reading] obtaining image data of a manuscript using the terminal by scanning the manuscript, the image data including a manuscript ID [as image data] image;

[a manuscript ID recognition step for] recognizing the manuscript ID [from] image included in the image data using the terminal and obtaining a manuscript ID as the recognition result of the manuscript ID image, the manuscript ID indicating information for an identification of the manuscript;

[a first transmitting step for] transmitting the recognized manuscript ID from the terminal to [said] the central control unit;

obtaining an information of character recognizing condition using the central control unit based on the transmitted manuscript ID, the information of character

recognizing condition including positional information of recognition areas of the manuscript;

transmitting a control signal including the obtained information of character recognizing condition from the central control unit to the terminal; and

[a first receiving step for receiving a control signal from the central control unit, the control signal having an information of character recognizing condition according to the transmitted manuscript ID;

a character recognition step for] performing character recognition [from] of character images included in the image data using the terminal in accordance with the information of character recognizing condition included with the transmitted control signal[;

a second receiving step of receiving the manuscript ID transmitted from said terminal;

an obtaining step for obtaining the information of character recognizing condition according to the received manuscript ID; and

second transmitting means for transmitting the control signal including the obtained information of character recognizing condition to said terminal].

21. (Twice Amended) The control method for a communication system according to claim 20, wherein said character recognition step determines recognition candidate characters corresponding to [said] the image data in accordance with the information of character recognition condition included with the control signal and outputs

a predetermined number of recognition candidate characters in [the] an order according to largeness of similarity of the recognition candidate characters.

22. (Three Times Amended) The control method for a communication system according to claim 20, wherein [said] the central control unit [further comprising] includes a database for managing [said] the control signal for the information of character recognizing condition corresponding to the manuscript ID, wherein said obtaining step obtains from [said] the database the control signal corresponding to the received manuscript ID.

23. (Twice Amended) The control method for a communication system according to claim 20, wherein the information of character recognizing condition includes positional information, showing each of plural recognition areas in [said] the image data, and recognition dictionary information showing a recognition dictionary used for recognition in each recognition area.

24. (Twice Amended) Computer-readable memory that stores program code for controlling a communication system that [performs communication between] that includes a terminal and a central control unit, said computer-readable memory comprising:

program code for [a read step of reading] obtaining image data of a manuscript using the terminal by scanning the manuscript, the image data including a manuscript ID [showing recognition position information of recognition areas in a specific

read manuscript, as] image [data];

program code for recognizing the manuscript ID image included in the image data using the terminal and obtaining a manuscript ID as the recognition result of the manuscript ID image, the manuscript ID indicating information for an identification of the manuscript;

program code for transmitting the recognized manuscript ID from the terminal to the central control unit;

program code for obtaining an information of character recognizing condition using the central control unit based on the transmitted manuscript ID, the information of character recognizing condition including positional information of recognition areas of the manuscript;

program code for transmitting a control signal including the obtained information of character recognizing condition from the central control unit to the terminal; and

program code for [a character recognition step of] performing character recognition [from] of character images included in the image data using the terminal in accordance with the information of character recognizing condition included with the transmitted[, read at said read step, with selecting a recognition dictionary whose members each correspond to each attribute of the data, on the basis of a] control signal[;

program code for a manuscript ID recognition step of recognizing said manuscript ID from said image data;

program code for a first communication step of transmitting a result of

character recognition at said character recognition step and a result of manuscript ID recognition at said manuscript ID recognition step to said central control unit or receiving said control signal from the central control unit;

program code for a second communication step of receiving the result of character recognition at said character recognition step and the result of manuscript ID recognition at said manuscript ID recognition step from said terminal or transmitting said control signal to the terminal; and

program code for a control step of controlling said control signal on the basis of the result of manuscript ID recognition at said manuscript ID recognition step, which said second communication step receives].

37. (Twice Amended) The communication system according to claim 16, wherein said character recognition means performs character recognition from the image data and judges on the basis of threshold information included in the information of character recognizing condition whether [the] a recognition candidate character included in the result of character recognition is unrecognizable and outputs the recognition candidate character when judged as recognizable.

38. (Twice Amended) The communication system according to claim 37, wherein said character recognition means judges whether [said] the recognition candidate character included in the result of character recognition is unrecognizable[,] by comparing the threshold information with a similarity of [said] the recognition candidate character.

39. (Twice Amended) The communication system according to claim 38, wherein said character recognition means judges that the recognition candidate character is unrecognizable[,] if the threshold information is larger than the similarity of [said] the recognition candidate character.

40. (Twice Amended) The communication system according to claim 37, wherein said character recognition means outputs a predetermined code showing unrecognizableness when all of the recognition candidate character is judged as an unrecognizable character.

42. (Three Times Amended) The communication system according to claim 18, wherein the information of character recognizing condition includes positional information, showing each of plural recognition areas in the manuscript [said image], and threshold information for judgement of unrecognizableness in each recognition area.

44. (Twice Amended) The control method for a communication system according to claim 20, wherein said character recognition step performs character recognition from the image data and judging on the basis of threshold information included in the information of character recognizing condition whether [the image data] a recognition candidate character included in the result of character recognition is unrecognizable and outputs the recognition candidate character when judged as recognizable.

45. (Twice Amended) The control method for a communication system according to claim 44, wherein said character recognition step judges whether [said image data] the recognition candidate character included in the result of character recognition is unrecognizable[,] by comparing the threshold information with a similarity of [said] the recognition candidate character.

46. (Twice Amended) The control method for a communication system according to claim 45, wherein said character recognition step judges that the recognition candidate character is unrecognizable[,] if the threshold information is larger than the similarity of [said] the recognition candidate character.

47. (Twice Amended) The control method for a communication system according to claim 44, wherein said character recognition step outputs a predetermined code showing unrecognizableness when all of [said image data] the recognition candidate character is judged as an unrecognizable character.

49. (Twice Amended) The control method for a communication system according to claim 22, wherein the information of character recognizing condition includes positional information, showing each of plural recognition areas in the manuscript [said image], and threshold information for judgement of unrecognizableness in each recognition area.